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(11)

**EP 0 862 882 B1**

(12)

**EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention  
of the grant of the patent:  
**03.07.2002 Bulletin 2002/27**

(51) Int Cl.7: **A47J 31/40**(21) Application number: **98101852.6**(22) Date of filing: **04.02.1998**(54) **Express-coffee machine loadable with wafers****Espresso-Kaffeemaschine bestückbar mit Kapseln****Machine à café utilisable avec des capsules**

(84) Designated Contracting States:  
**AT BE CH DE ES FR GB GR LI NL PT**

(30) Priority: **05.02.1997 IT MI970222**

(43) Date of publication of application:  
**09.09.1998 Bulletin 1998/37**

(73) Proprietor: **C.M.A. S.p.A.**  
**31058 Susegana (Treviso) (IT)**

(72) Inventor: **Nello, Dal Tio**  
**31058 Susegana (Treviso) (IT)**

(74) Representative: **Dalla Rosa, Adriano**  
**European Patent Attorney**  
**SEBRINT**  
**Via Vettorel 3**  
**31015 Conegliano (TV) (IT)**

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**EP-A- 0 615 713****US-A- 2 451 195****US-A- 3 403 617****DE-U- 29 601 233****US-A- 3 007 392****US-A- 5 531 152**

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## Description

[0001] The present invention relates to an express-coffee-machine to be loaded with wafers for domestic use, for offices and the like. There are known machines for preparing coffee loaded with preassembled wafers as known from US-A-2 451 195 and US-A-5 531 152.

[0002] These machines are provided with a boiler situated above with two heads between which the wafer containing the ground coffee blend is arranged.

[0003] After having approached both heads to each other by operating crank mechanisms, the water, which is heated and submitted under pressure by means of an electric pump is filtered through the wafer thereby producing the desired beverage.

[0004] A drawback of these machines is due to the structural complications related to the system of approaching both heads which in the manual solution must be operated by means of a lever situated in front of or laterally to the machine.

[0005] Another drawback of these machines relates to the impossibility of obtaining an upper opening because of the presence of the boiler which makes less practical the loading of the machine and much difficult the cleaning of the same in the zone of the infusion unit.

[0006] The purpose of the present invention consists in eliminating said drawbacks by offering an express-coffee-machine with wafers which is structurally simple and can be easily operated when opening and closing it and easily to be cleaned.

[0007] This and other purposes are achieved with the coffee-machine with wafers according to the invention, offering the characteristics of claim 1.

[0008] The preferred embodiments of the invention result from the dependent claims.

[0009] Further characteristics of the invention will appear clearer thanks to the detailed description which follows, relating to a simple embodiment thereof and therefore not-limiting embodiment thereof, illustrated in the attached drawings, whereby:

- Fig. 1 is a schematic middle cutaway view with some parts of the coffee-machine according to the invention shown;
- Fig. 2 is a cutaway view according to the line II - II of Fig. 1;
- Fig. 3 is a plan view from above of the sole wafer pressing unit of the coffee machine according to the invention;
- Fig. 4 is a cutaway view according to the line IV - IV of Fig. 3;
- Fig. 5 shows a side view of a first disengaged position of the wafer pressing unit of the coffee machine according to the invention;
- Fig. 6 is a view similar to Fig. 5 showing an opening position of the wafer pressing unit of the coffee machine according to the invention.

[0010] In Fig. 1 it is shown a coffee machine 1 with wafers according to the invention, including a casing 2, an extractable vessel 3, a unit 4 for pressing the wafer 36 (Fig. 6) comprising one first fixed lower head 5 which can engage a second movable upper head 6 by means of lever closing means 8. This second head 6 is also provided with a spout 7 for distributing the beverage.

[0011] On the casing 2 there are provided one first main switch 9 for supplying a resistance 17, a second switch 10 to actuate the distribution of the beverage and a warning light 11 for controlling the temperature of the water to be infused on the wafer 36 containing the ground coffee blend.

[0012] By operating the first switch 9, the resistance 17 of a boiler 16 is supplied and the water contained therein is heated and when it reaches the desired temperature (for example 98°C), one thermostat, not shown in the figure, switches off the warning light 11, which was switched on when the device 1 was operated, showing that the water has reached a pre-established temperature level.

[0013] When the second switch 10 is changed over, an electric pump 14 sucking the water loaded into one vessel 12 by means of a first tube 13 is actuated and leads it through a second tube 15 into the boiler 16.

[0014] The changed over condition of the second switch 10 contemporaneously actuates a solenoid valve 18 which, as the cutaway view of Fig. 2 shows more in detail, is communicating with the boiler 16 by means of a first conduit 19 and with the head 5 by means of a second conduit 20.

[0015] The solenoid valve 18 puts into communication the conduits 19, 20 by supplying with heated water under pressure the head 5 provided with a filter 33 and supporting a gasket 32, which, as shown in Fig. 6, is foreseen for sealing the upper head 6. This water, pushed through the wafer 36 containing the coffee blend arranged between the first and the second head 6, provided with a filter 40 too, lets the beverage flow through the spout 7.

[0016] In order to guarantee the safety of the boiler 16, the solenoid valve 18 is provided with a drain valve 21 connected by means of a third tube 22 with an opening 23 so as to permit the condensate water to be drained into the removable vessel 3.

[0017] With particular reference to the Fig. 3 and 6 it is shown the lever closing device 8 including an arm 24 which is hinged at its first end portion on the position 41 with the pressing unit 4, in particular with the structure carrying the fixed lower head 5. The head 6 is secured to this arm 24 by means of fixing elements 29, particularly studs, as shown in the Figures. The other end of the arm 24 is connected by means of a joint 25 with a control lever 26 including a handle 27.

[0018] A fork 28 is connected integral with and perpendicular to said lever 26, at the end portions of which, as Fig. 4 shows in detail, there are foreseen some cavities 30 engaging the projections 31 provided on the

head 5.

[0019] In order to close the unit 4 starting from the position illustrated in Fig. 6, the head 6 is initially lowered onto the head 5 by making a first rotation of the arm 24 hinged with the unit 4, until the head 6 engages the head 5 as Fig. 5 shows.

[0020] In order that the fork 28 is in a proper engagement position with respect to the projection 31, when the two heads 5 and 6 are into contact, the lever 26 contains a resilient element 34 (Fig. 6) in particular a spring, so that when the closing device 8 is not operating, the lever 26 is moved away of an opening angle with respect to the arm 24 and thereby permitting the fork 28, which in turn is integral with the arm 24, to attain the proper engagement position.

[0021] The opening angle of the lever 26 with respect to the arm 24 is regulated by means of blocks 35. Thereafter, a further pressure on the lever 26 causes a rotation of the lever 26 with respect to the joint 25, by engaging the cavities 30 of the lever 26 with the projections 31 of the fixed head 5.

[0022] Said cavities 30 have flared edges in order to facilitate the insertion into said projections 31. According to what explained, there are clear the advantages of the coffee machine according to the invention, which is provided with a simplified closing unit, which makes the operations of loading and cleaning thereof easier.

#### Claims

1. Express coffee machine loadable with wafers including a casing (2), a unit (4) for the pressing of the wafer (36) in which the water is led through a boiler (16), characterized in that said unit (4) includes a fixed lower head (5) and a movable upper head (6) which can be engaged and disengaged to each other by means of lever closing means (8), and that said boiler (16) is arranged below said unit (4).
2. Coffee machine according to claim 1, characterized in that said lever closing means (8) includes an arm (24) carrying said movable upper head (6), hinged at its first end portion with the structure carrying said fixed lower head (5) and connected at the other end portion by means of a joint (25) with a control lever (26).
3. Coffee machine according to claim 2, characterized in that said control lever (26) is fixed integrally with a fork (28), at the end of which some cavities (30) engaging projections (31) provided on the fixed head (5) are provided, said cavities (30) being provided with flared edges in order to facilitate the introduction of said projections (31) therein.

4. Coffee machine according to claim 3, character-

ized in that said control lever (26) contains a resilient element (34), in particular a spring.

5. Coffee machine according to claim 3, characterized in that said control lever (26) co-operates with blocks (35) for regulating the opening angle of the same lever with respect to said arm (24).

#### 10 Patentansprüche

1. Espresso-Kaffeemaschine, die mit Kapseln bestückbar ist, mit einem Gehäuse (2), einer Einheit (4) zum Pressen der Kapsel (36), wobei das Wasser durch einen Boiler (16) geführt wird, dadurch gekennzeichnet, daß die Einheit (4) einen feststehenden unteren Kopf (5) und einen bewegbaren oberen Kopf (6) enthält, die mit Hilfe einer Hebelschließvorrichtung (8) in Anlage aneinander gebracht und voneinander getrennt werden können, und daß der Boiler (16) unter der Einheit (4) angeordnet ist.
2. Kaffeemaschine nach Anspruch 1, dadurch gekennzeichnet, daß die Hebelschließvorrichtung (8) einen Arm (24) enthält, der den bewegbaren oberen Kopf (6) trägt, und der an einem ersten Endabschnitt an der Struktur angelenkt ist, die den feststehenden unteren Kopf (5) trägt, und der mit dem anderen Endabschnitt mittels eines Gelenks (25) mit einem Steuerhebel (26) verbunden ist.
3. Kaffeemaschine nach Anspruch 2, dadurch gekennzeichnet, daß der Steuerhebel (26) einstückig mit einer Gabelung (28) zusammengesetzt ist, an deren Ende einige Hohlräume (30) vorgesehen sind zum Eingriff mit Vorsprüngen (31) an dem feststehenden Kopf (5), und daß die Hohlräume (30) mit abgeschragten Rändern versehen sind, um das Eintreten der Vorsprünge (31) in die Hohlräume zu erleichtern.
4. Kaffeemaschine nach Anspruch 3, dadurch gekennzeichnet, daß der Steuerhebel (26) ein elastisches Element (34), insbesondere eine Feder, enthält.
5. Kaffeemaschine nach Anspruch 3, dadurch gekennzeichnet, daß der Steuerhebel (26) mit Widerlagern (35) zusammenwirkt, um den Öffnungswinkel des Hebels mit dem Arm (24) einzustellen.

## Revendications

1. Machine à café express pouvant être chargée avec des pastilles et comportant un corps (2), une unité (4) de pressage de la pastille (36) dans laquelle l'eau est amenée par une bouilloire (16), caractérisée en ce que ladite unité (4) comprend une tête inférieure fixe (5) et une tête supérieure mobile (6) qui peuvent être engagées et désengagées l'une par rapport à l'autre par le biais d'un moyen de fermeture à levier (8), et en ce que ladite bouilloire (16) est disposée sous ladite unité (4). 5 10
2. Machine à café selon la revendication 1, caractérisée en ce que ledit moyen de fermeture à levier (8) comprend un bras (24) portant ladite tête supérieure amovible (6), articulé au niveau de sa première portion d'extrémité avec la structure portant ladite tête inférieure fixe (5) et relié à l'autre portion d'extrémité au moyen d'une charnière (25) avec un levier de commande (26). 15 20
3. Machine à café selon la revendication 2, caractérisée en ce que ledit levier de commande (26) est relié de façon intégrale à une fourchette (28), aux extrémités de laquelle des cavités (30) engageant des projections (31) prévues sur la tête fixe (5) sont prévues, lesdites cavités (30) étant munies de bords évasés afin de faciliter l'introduction desdites projections (31) à l'intérieur. 25 30
4. Machine à café selon la revendication 3, caractérisée en ce que ledit levier de commande (26) contient un élément élastique (34), en particulier un ressort. 35
5. Machine à café selon la revendication 3, caractérisée en ce que ledit levier de commande (26) coopère avec des stoppeurs (35) pour régler l'angle d'ouverture dudit levier par rapport audit bras (24). 40

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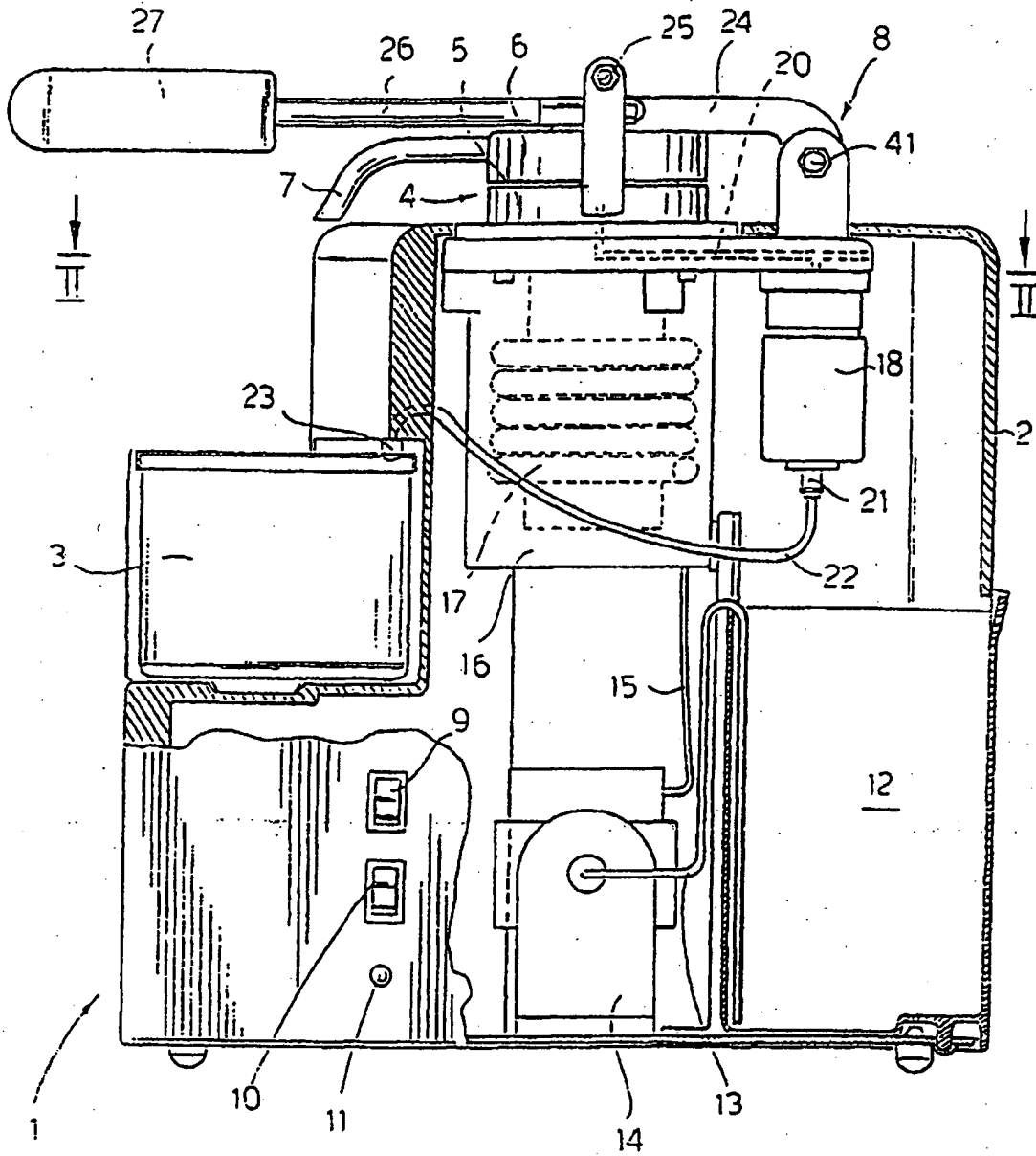


FIG. 1

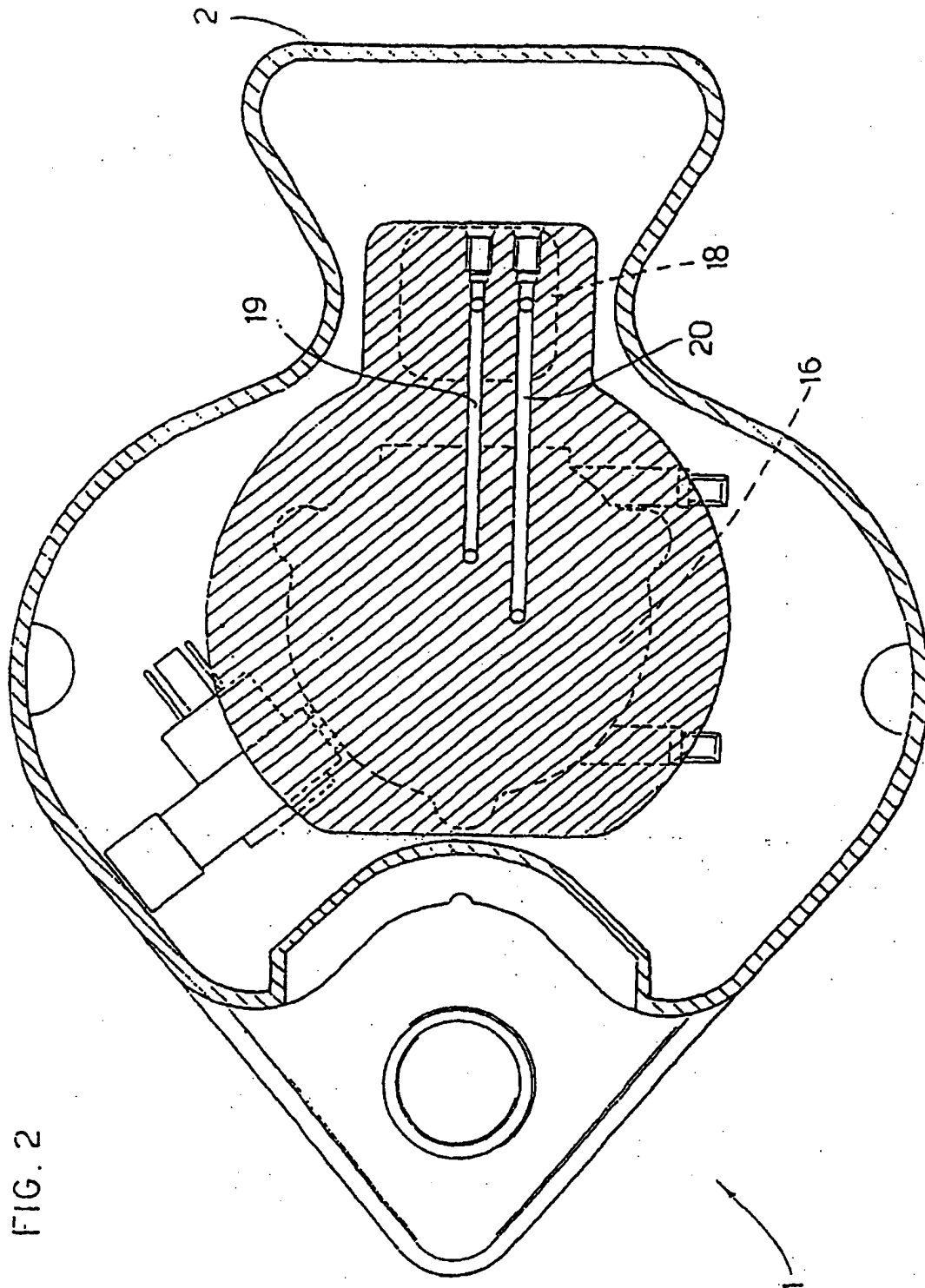


FIG. 2

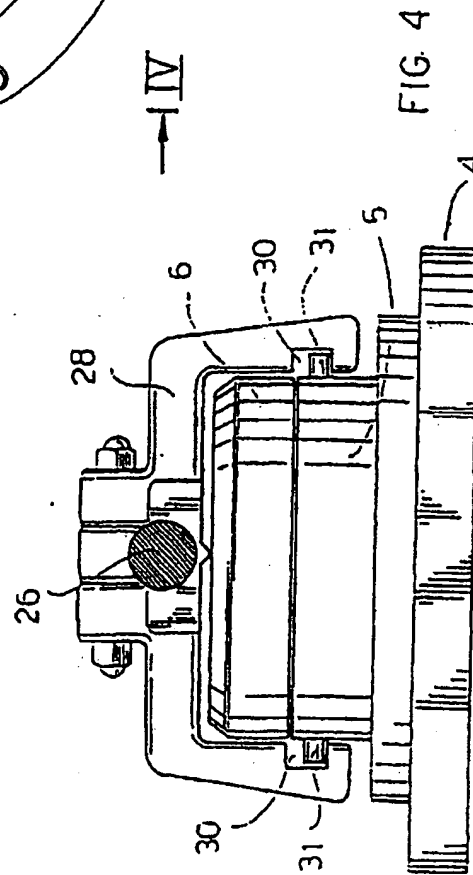
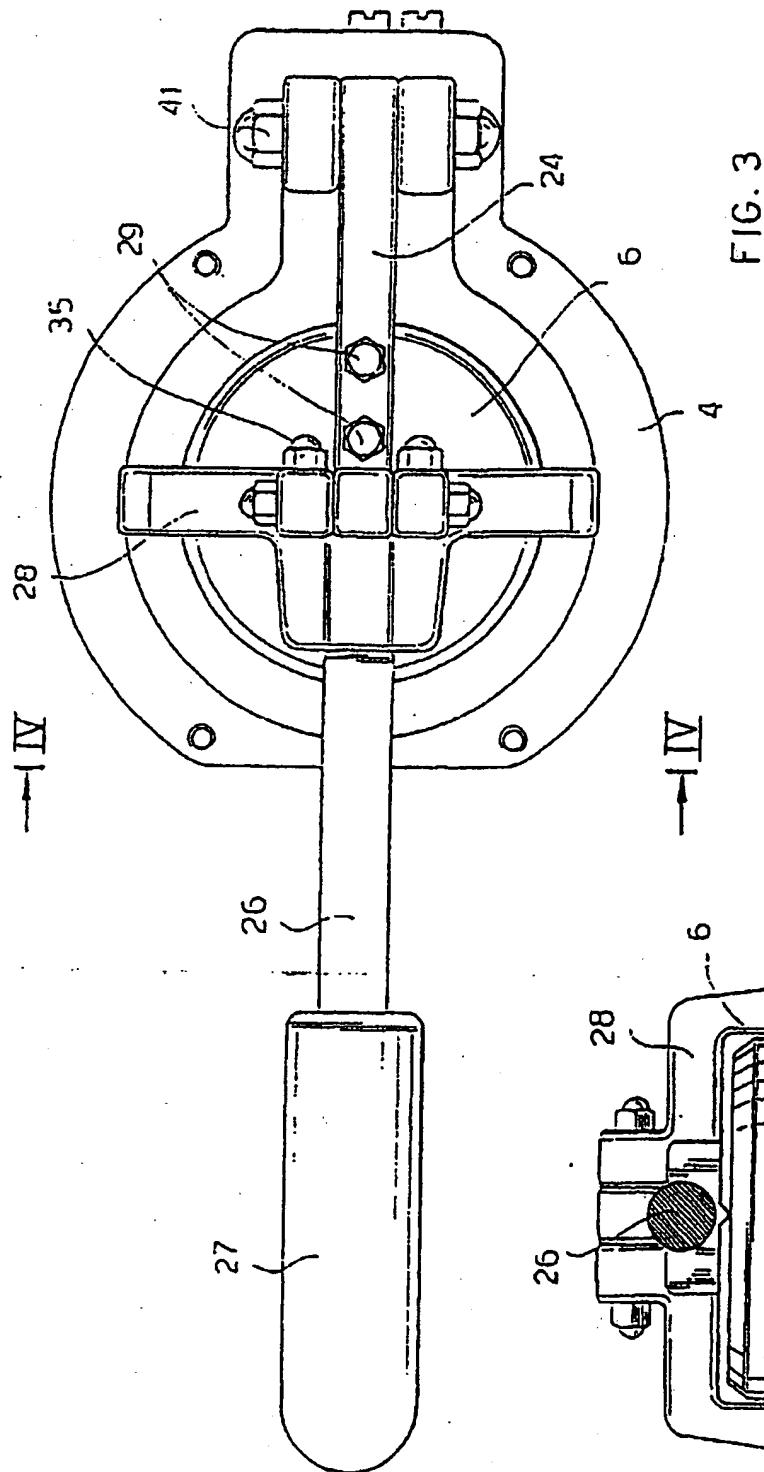


FIG. 5

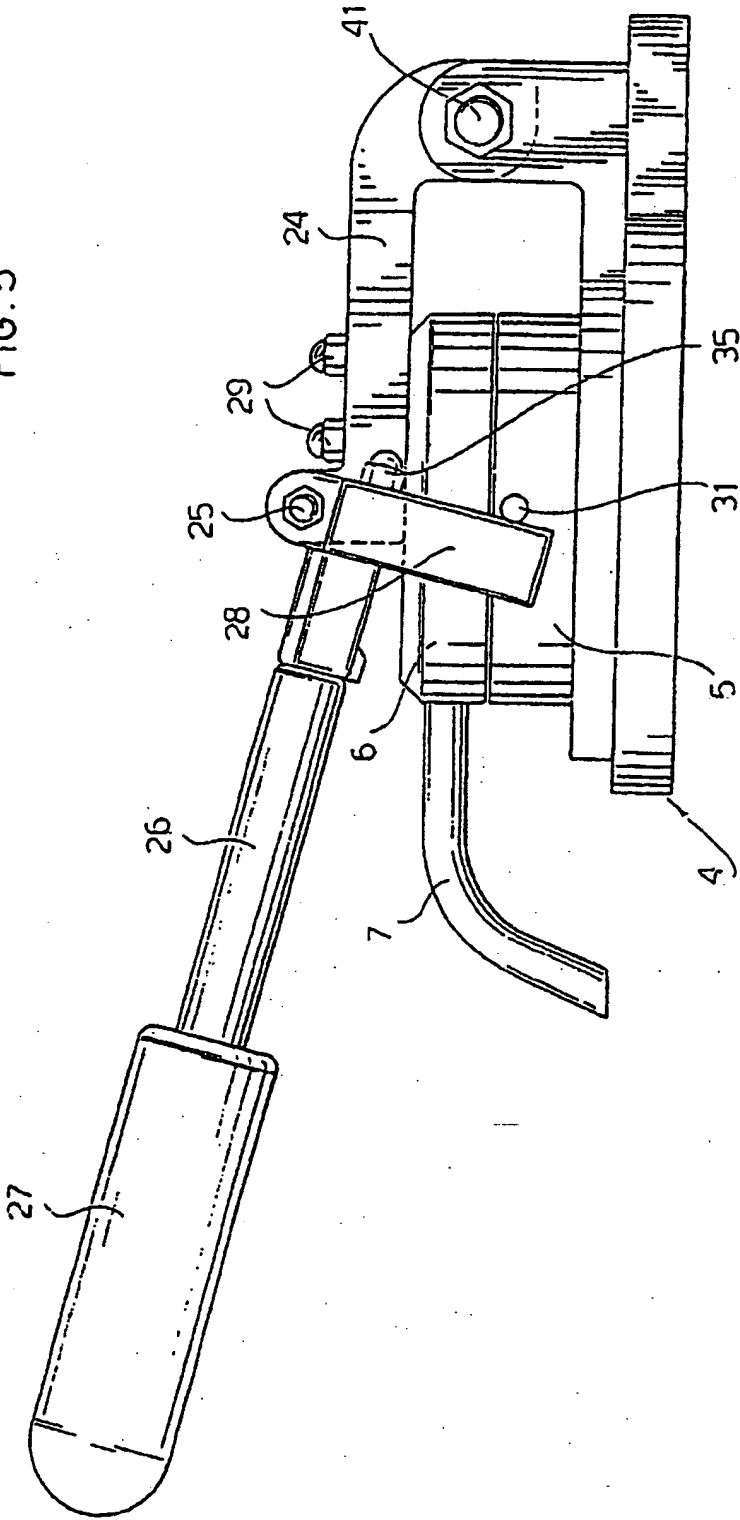
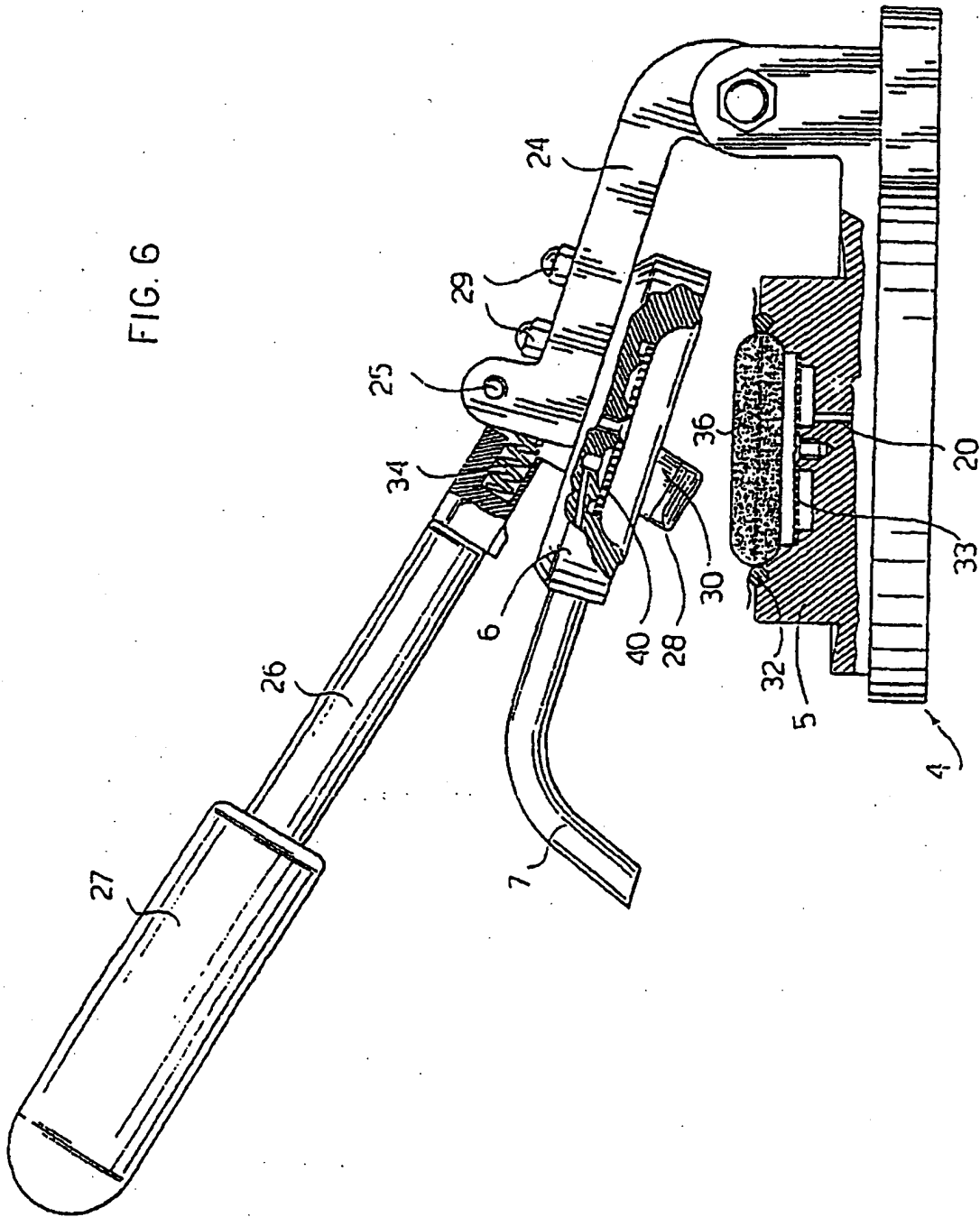




FIG. 6



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